

Notice of Class 1 Permit Modification

**Allow the Use of ASTM Type I or Type II Water
and
Allow the Use of Zero Air or Nitrogen Generator**

**Waste Isolation Pilot Plant
Carlsbad, New Mexico**

WIPP HWFP # NM4890139088-TSDF

February 4, 2002

Transmittal Letter

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Acronyms and Abbreviations

ASTM	American Society for Testing and Materials
CBFO	Carlsbad Field Office
CFR	Code of Federal Regulations
CO ₂	Carbon Dioxide
DOE	Department of Energy
FTIRS	Fourier Transform Infrared System
HWFP	Hazardous Waste Facility Permit
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
PMN	Permit Modification Notification
SRS	Savannah River Site
VOC	Volatile Organic Compound
WIPP	Waste Isolation Pilot Plant
WTS	Westinghouse TRU Solutions, LLC

Overview of Permit Modifications

This document contains a Class 1 Permit Modification Notification (**PMN**) to the Hazardous Waste Facility Permit (**HWFP**) at the Waste Isolation Pilot Plant (**WIPP**), Number NM4890139088-TSDF hereinafter referred to as the WIPP HWFP.

This PMN is being submitted by the U.S. Department of Energy (**DOE**), Carlsbad Field Office (**CBFO**) and Westinghouse TRU Solutions, LLC (**WTS**), collectively referred to as the Permittees, in accordance with the WIPP HWFP, Condition I.B.1 (20.4.1.900 New Mexico Administrative Code (**NMAC**) incorporating 40 Code of Federal Register (**CFR**) §270.42(a)). This change does not reduce the ability of the Permittees to provide continued protection to human health and the environment.

The modifications to the WIPP HWFP and related supporting documents are provided in the following sections of the PMN. The modifications to the text of the WIPP HWFP have been identified using a double underline for new information added and a ~~strikeout~~ font for information proposed for deletion. There is also a right hand /outside margin Revision Bar to assist in location of all additions.

This PMN contains two items that will provide generator sites flexibility in headspace gas analysis.

No.	Affected Permit Section	Item	Category	Attachment A Page #
1	a.1. Attachment B1 b.1. Attachment B6	Allow the use of ASTM Type I water or ASTM Type II water to humidify gasses and allow the use of either a zero air or nitrogen generator	A.1	A-2

Attachment A

Description of the Hazardous Waste Facility Class 1 Permit Modifications

Item 1

Description:

This modification will allow generator/storage sites the ability to use either American Society for Testing and Materials (**ASTM**) Type I or Type II water.

This modification will also allow the generator/storage sites to use a zero air or nitrogen generator or compressed gasses during headspace gas sampling.

Basis:

The current HWFP (Section B1-1a(1)) requires that the humidifier connected to a manifold headspace gas sampling system be filled with ASTM Type II water. An observation regarding humidification water was made during the Savannah River Site (**SRS**) audit on December 12, 2001. Mr. Steve Holmes of the NMED suggested that a Class 1 notification be submitted to allow the use of either Type I or Type II water.

The generator/storage sites have requested the ability to use a nitrogen generator as an alternative to the zero air generator or compressed gasses for headspace gas sampling as currently required in Attachment B1, Section B1-1a(1) of the HWFP. The nitrogen generator will meet the requirement for maximum Volatile Organic Compound (**VOC**) contamination as specified for the zero air generator in the aforementioned Section. The change does not functionally impact the headspace gas sampling process because the use of compressed nitrogen is currently an allowable option to zero air.

Discussion:

The current HWFP specifies the use of ASTM Type II water to humidify gasses used to condition the equipment blanks and field-reference standards and to assist with manifold cleaning between headspace gas sample collection when a method other than Fourier Transform Infrared Spectroscopy (**FTIRS**) is used for analysis.

Mr. Holmes on Observer Inquiry Form # A-02-06-001 dated December 12, 2001, indicated that, "ASTM Type I water is far superior for humidification functions than ASTM Type II water." As suggested by Mr. Holmes, the CBFO is submitting a Class 1 modification to allow the use of either Type I or Type II water for humidification.

The basis for making this change as a Class 1 modification is related to the use of ASTM Type II water in the HWFP. The HWFP requires that humidification water be sufficiently pure so as not to affect the analytical data. Water purity is measured by conductivity. The conductivity of ASTM Type II water (1.0 micromho/cm) is higher than the conductivity of ASTM Type I water (0.056 micromho/cm) which indicates that Type I water is purer. All other specified compounds in these waters (i.e. chloride, sodium, silica and total organic carbon) are present in concentrations too low to be considered significant to the measurements required in the WIPP program.

The current HWFP requires the use of gasses in cylinders such as zero air, helium, argon or nitrogen for collecting equipments blanks and cleaning the manifold between samples. Currently, a zero air generator may be employed in lieu of a compressed gas

cylinder provided a sample of the zero air is collected and demonstrated to contain less than 1 ppm total VOCs.

Because nitrogen gas is already allowed by the HWFP, this change does not alter the functionality of the headspace gas sampling system or the analytical results. This modification only allows the use of a nitrogen generator that meets the same requirements as the zero air generator.

Sites may continue to use gas cylinders, a zero air generator or may now use a nitrogen generator. Site procedures that are modified to incorporate use of a nitrogen generator will be subject to an adequacy review by CBFO personnel.

Revised Permit Text:

a. 1. Attachment B1, Section B1-1a(1)

The standard side must consist of the following major elements:

- C A cylinder of compressed zero air, helium, argon, or nitrogen gas that is hydrocarbon and carbon dioxide (CO_2)-free (only hydrocarbon and CO_2 -free gases required for Fourier Transform Infrared System [FTIRS]) to clean the manifold between samples and to provide gas for the collection of equipment blanks or on-line blanks. These high-purity gases shall be certified by the manufacturer to contain less than one ppm total VOCs. The gases must be metered into the standard side of the manifold using devices that are corrosion proof and that do not allow for the introduction of manifold gas into the purge gas cylinders or generator. Alternatively, a zero air or nitrogen generator may be used, provided a sample of the zero air or nitrogen is collected and demonstrated to contain less than one ppm total VOCs. Zero air or nitrogen from a generator shall be humidified (except for use with FTIRS).
- C Cylinders of field-reference standard gases or on-line control sample gases. These cylinders provide gases for evaluating the accuracy of the headspace-gas sampling process. Each cylinder of field-reference gas or on-line control sample gas shall have a flow-regulating device. The field-reference standard gases or on-line control sample gas shall be certified by the manufacturer to contain analytes from Table B3-2 of Permit Attachment B3 at known concentrations.
- C If using an analytical method other than FTIRS a humidifier filled with American Society for Testing and Materials (ASTM) Type I or II water, connected, and opened to the standard side of the manifold between the compressed gas cylinders and the purge assembly shall be used. Dry gases flowing to the purge assembly will pick up moisture from the humidifier. Moisture is added to the dry gases to condition the equipment blanks and field-reference standards and to assist with system cleaning between headspace-gas sample collection. If using FTIRS for analysis, the sample and sampling system shall be kept dry.

b.1. Attachment B6

Table B6-4 Headspace Gas Checklist

192	<p>Are procedures, processes, and equipment in place to ensure that the following manifold standard side conditions are met:</p> <p>C A cylinder of compressed zero air, helium, or nitrogen that is hydrocarbon and CO₂ free air (only hydrocarbon and CO₂-free gases required for FTIRS) certified by the manufacturer to contain less than one ppm VOCs. The gas is used to clean the manifold between samples and to provide gas for the collection of equipment and on-line blanks <i>(Note: a zero air <u>or nitrogen</u> generator may be used, provided a sample of air is collected and found to contain less than 1 ppm total VOCs and the air is humidified)</i></p> <p>C Cylinders of reference gas with known concentrations of analytes from Table B3-2 certified by the manufacturer to provide gases for evaluating the accuracy of the headspace gas sampling process</p> <p>C All cylinders of reference gases and zero air shall be connected to flow regulating devices that are corrosion proof and that do not allow for the introduction of manifold gas into the purge gas cylinders or generator</p> <p>C A humidifier filled with ASTM Type <u>I</u> or II water, connected, and opened to the standard side of the manifold between the compressed gas cylinders and the purge assembly, if the Fourier Transform Infrared System (FTIRS) is not used. No humidifier if the FTIRS is used <i>(Note: Compressed gas may include water vapor between 1000 and 10000 ppmv in lieu of a humidifier)</i></p> <p>C The humidifier is off-line during system evacuation to prevent manifold flooding</p>
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